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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	MERRY, RICHARD P.		
Application No.:	10/561,290	Application No.:	10/561,290
Filed:	June 30, 2004	Filed:	June 30, 2004
Title:	MOUNTING MAT FOR MOUNTING MONOLITH IN A POLLUTION CONTROL DEVICE		

BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents
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August 26, 2009 /Joyce M. Courtney/
Date Signed by: Joyce M. Courtney

Dear Sir:

This is an appeal from the Office Action mailed on January 26, 2009 finally rejecting claims 21 to 40, and the Advisory Action mailed April 8, 2009.

A Notice of Appeal in this application was sent on April 27, 2009, and was received in the USPTO on April 27, 2009.

Appellants request the opportunity for a personal appearance before the Board of Appeals to argue the issues of this appeal. The fee for the personal appearance will be timely paid upon receipt of the Examiner's Answer.

Fees

☒ Any required fee under 37 CFR § 41.20(b)(2) will be made at the time of submission via EFS-Web. In the event fees are not or cannot be paid at the time of EFS-Web submission, please charge any fees under 37 CFR § 1.17 which may be required to Deposit Account No. 13-3723.

☒ Please charge any additional fees associated with the prosecution of this application to Deposit Account No. 13-3723. This authorization includes the fee for any necessary extension of time under 37 CFR § 1.136(a). To the extent any such extension should become necessary, it is hereby requested.

☒ Please credit any overpayment to the same deposit account.

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Real Party In Interest

The real party in interest is 3M Company of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

Related Appeals And Interferences

Appellants are unaware of any related appeals or interferences.

Status of Claims

Claims 21 to 40 are pending.

Claims 1-20 were cancelled.

Claims 21 to 40 stand rejected.

Claims 21 to 40 are the claims on appeal.

Status of Amendments

No amendments have been filed after the final rejection.

Summary Of Claimed Subject Matter

Independent claim 21 provides a pollution control device (see, e.g., page 4, lines 13-14 and 18-19; and page 5, line 7). The pollution control device comprises a pollution control element (see, e.g., page 4, lines 8-9 and 19) arranged in a casing (see, e.g., page 4, line 19; and page 5, line 7) with a mounting mat (see, e.g., page 4, lines 19-20; and page 5, line 10) disposed between the casing and the pollution control element (see, e.g., page 4, lines 19-20; and page 5, lines 10-12), the casing having an exterior exposed to the atmosphere (see, e.g., page 5, lines 15). The mounting mat comprises at least one intumescent layer (see, e.g., page 4, lines 9-10; and page 7, lines 12-18) disposed between at least one first non-intumescent layer (see, e.g., page 4, line 10; and page 7, lines 12-22) and at least one second non-intumescent layer (see, e.g., page 4, line 10; and page 7, lines 12-22), with the at least one first non-intumescent layer being disposed between the at least one intumescent layer and said pollution control element, and the at least one second non-intumescent layer being disposed between the at least one intumescent layer and the casing (see, e.g., page 4, lines 9-11 and 18-20; page 5, line 10; and page 6, line 31, bridging paragraph, page 7, lines 1-7).

Dependent claim 30, which depends from claim 21 further specifies that the uncompressed thickness of said intumescent layer is not more than about 1/3 of the combined uncompressed thicknesses of said first non-intumescent layer and said second non-intumescent layer See page 9, lines 12-14).

Grounds of Rejection to be Reviewed on Appeal

I. Claims 21-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,999,168 (Ten Eyck) in view of U.S. Pat. No. 5,290,522 (Rogers et al.).

II. Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,999,168 (Ten Eyck) in view of U.S. Pat. No. 5,290,522 (Rogers et al.), and in further view of applicant's admission of prior art.

Arguments

I. Claims 21-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,999,168 (Ten Eyck) in view of U.S. Pat. No. 5,290,522 (Rogers et al.).

It is the Patent Office's position that one of ordinary skill in the art would be properly motivated to modify '168 (Ten Eyck) with '522 (Rogers et al.) by substituting reinforcing layer 24 of '168 (Ten Eyck) with the non-intumescent layer of '522 (Rogers et al.) (page 3, lines 2-5 of the second full paragraph of the Final Office Action mailed January 26, 2009 and page 3, lines 2-5 of the second full paragraph of the Advisory Action mailed April 8, 2009). Applicant respectfully disagrees that one of ordinary skill in the art would be properly motivated to make this modification. Applicant notes that to modify '168 (Ten Eyck) with '522 (Rogers et al.) requires substituting the non-intumescent layer of '522 (Rogers et al.), the thinnest of which explicitly stated therein is almost 9 times greater[1] than the thickest reinforcing layer 24 of '168 (Ten Eyck).

The Patent Office in the Final Office Action mailed January 26, 2009 more fully articulated its position in Paragraph Nos. 8 and 9. In Paragraph No. 8, it was stated that the rationale for combining '168 (Ten Eyck) in view of '522 (Rogers et al.) is to improve the cushioning and thermal protection properties. Further, it was said, in part, in Paragraph No. 9 that:

> ... Ten Eyck discloses that for the reinforcing layer, "there is no criticality in the composition" and the only considerations listed are "tensile strength greater than that of the intumescent layer ... and have some flexibility" (C5, L15-60). The examiner contends that such a disclosure does not prohibit the use of the non-intumescent mat of Rogers et al. The thickness parameter cited by the applicant is meant to be an example of one such possible thickness for Kraft paper or generic plastic film reinforcing layer and one having ordinary skill in the art would not assume that such a thickness would apply to the layer of Rogers et al, which is made of a more specific material having a particular improved functionality. One having ordinary skill in the art would have adjusted, through routing experimentation, the relative thicknesses of the intumescent and nonintumescent layers of the modified Ten

[1] 0.16 cm in Example 1 (col. 7, line 14) of '522 (Rogers et al.) versus 7 mil (0.0178 cm) in '168 (Ten Eyck) (col. 5, lines 55-57).

> Eyck reference (i.e. using the mat of Rogers et al.), in order to optimize the mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties.

In response, Applicant argued that the thickness of reinforcing layer 24 of 168 (Ten Eyck) appears to be relatively thin (see col. 5, lines 49-64; also see col. 3, lines 64-67 of '168 (Ten Eyck)) as compared to thickness of the non-intumescent layer proposed to be substituted from '522 (Rogers et al.). Specific thicknesses discussed in '168 (Ten Eyck) with respect to the reinforcing layer are at col. 5, lines 55-59, with the largest being "up to 7 mils" which is about 0.0178 cm.

Further, Applicant argued that while '168 (Ten Eyck) does not prohibit thickness of the reinforcing layer greater than 7 mils, it also does not teach or suggest thicknesses greater than 7 mils either. Rather, it conveys to one of ordinary skilled in the art to thickness less than 7 mil (see, e.g., col. 5, lines 58-59 and col. 3, lines 64-68, bridging sentence, col. 4, lines 1-3). Hence, '168 (Ten Eyck) teaches away from thickness of the reinforcing layer greater than 7 mils. Therefore, one having ordinary skill in the art would not assume a thickness as suggested in the Office Action, nor is it clear why, given the thickness teachings of '168 (Ten Eyck), one having ordinary skill in the art would even properly look to '522 (Rogers et al.), let alone make the proposed modification.

Further, it is said, in part, in Paragraph No. 10 of the Final Office Action mailed January 26, 2009 that:

> The examiner also contends that adequate rational was given in the previous office action as to motivation to use the disclosure of Rogers et al. with Ten Eyck: "Rogers et al. discloses a non-intumescent inorganic fiber mat with beneficial cushioning and thermal protection properties for use with monolith exhaust systems (Fig. 1, C2, L35-51). ... The inventions of both Ten Eyck and Rogers et al. are drawn to the field of catalytic monolith mounting mats."

Applicant contended in their response that notwithstanding the proposed rationale for combining '168 (Ten Eyck) in view of '522 (Rogers et al.), it is submitted that given the teachings of '168 (Ten Eyck) and '522 (Rogers et al.) discussed above with respect to the reinforcing and non-intumescent layers (as required in Applicant's claim), one having ordinary skill in the art would not, absent the inappropriate use of hindsight analysis, particularly in view of the "teaching away" of '168 (Ten Eyck) with respect to thickness

of the reinforcing layer, be properly motivated to combine '168 (Ten Eyck) and '522 (Rogers et al.) as suggested in the Office Action.

After Applicant filed their Response (dated March 26, 2009) to the Final Office Action (mailed January 26, 2009), the Patent Office issued an Advisory Action (mailed April 8, 2009). In Paragraph Nos. 2-4 and unnumbered paragraph five of the Advisory Action (mailed April 8, 2009) it was stated:

> 2. Regarding applicant's argument that the disclosure of different thicknesses in the two prior art references amounts to them being taught away from each other, the examiner disagrees. As stated before, Ten Eyck discloses that for the reinforcing later "there is no criticality in the composition" and the only considerations listed are "tensile strength greater than that of the intumescent layer... and have some flexibility" (C5, L15-60). The examiner contends that such a disclosure does not prohibit the use of the non-intumescent mat of Rogers et al. The thickness parameter cited by applicant is meant to be an example of one such possible thickness for Kraft paper or generic plastic film reinforcing layer and one having ordinary skill in the art would not assume that such a thickness would apply to the layer of Rogers et al., which is made of a more specific material having a particular improved functionality. One having ordinary skill in the art would have adjusted, through routine experimentation, the relative thicknesses of the intumescent and nonintumescent layers of the modified Ten Eyck reference (i.e. using the mat of Rogers et al.), in order to optimize the mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties.
>
> 3. Applicant alleges that Ten Eyck's teachings of less the 7 mil thick teaches away from that layer being more than 7 mil thick; however, the examiner notes that nowhere is it disclosed that having a thickness of greater than 7 mils would result in any detrimental properties. The fact that Ten Eyck prefers less than 7 mils thick in one example does not imply that thicknesses of more than 7 mils are detrimental.
>
> 4. Applicant mentions hindsight reasoning, however the motivation to combine the two references is explicitly stated in the Rogers reference: Rogers et al. discloses a non-intumescent inorganic fiber mat with beneficial cushioning and thermal protection properties for use with monolith exhaust systems (Fig. 1, C2, L35-51). The mounting mat of Rogers et al. is disclosed as solving the problem of inadequate surface density in fibrous mats though needlepunching to achieve surface densities of greater than 200g/m^2 (C2, L50-68 and C6 6, L27-32).

> The inventions of both Ten Eyck and Rogers et al. are drawn to the field of catalytic monolith mounting mats and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the three layer mat of Ten Eyck by using the inorganic fiber mat of Rogers et al. as the non-intumescent layer material for the purposes of imparting enhanced thermal holding properties (Rogers et al. C2, L35-51).

First, with respect to the statement "Applicant alleges that Ten Eyck's teachings of less the 7 mil thick teaches away from that layer being more than 7 mil thick" in the third numbered paragraph five of the Advisory Action (mailed April 8, 2009), Applicant more clearly stated at page 5, line 25 of their response dated March 26, 2009:

> It is submitted that while '168 (Ten Eyck) does not prohibit thickness of the reinforcing layer greater than 7 mils, it also does not teach or suggest thicknesses greater than 7 mils either. Rather, it conveys to one of ordinary skilled in the art to thickness less than 7 mil (see, e.g., col. 5, lines 58-59 and col. 3, lines 64-68, bridging sentence, col. 4, lines 1-3). Hence, '168 (Ten Eyck) teaches away from thickness of the reinforcing layer greater than 7 mils.

And Applicant noted in the same response at page 5, lines 1-3 "Specific thicknesses discussed in '168 (Ten Eyck) with respect to the reinforcing layer are at col. 5, lines 55-59, with the largest being "**up to 7 mils**" which is about 0.0178 cm" (bolding added for emphasis). That is, Applicant acknowledged that the largest explicit thickness for the '168 (Ten Eyck) reinforcing layer was up to 7 mils, not less than 7 mils as characterized in the quote at the beginning of the instant paragraph referring to the third numbered paragraph five of the Advisory Action (mailed April 8, 2009).

Second, '168 (Ten Eyck) conveys to one of ordinary skilled in the art to relatively thin (as compared to the thicknesses of '522 (Rogers et al.) up to 7 mil (see, e.g., col. 5, lines 58-59 and col. 3, lines 64-68, bridging sentence, col. 4, lines 1-3 of '168 (Ten Eyck). Hence, '168 (Ten Eyck) teaches away from thickness of the reinforcing layer greater than 7 mils. Applicant noted at the beginning of the present argument to modify '168 (Ten Eyck) with '522 (Rogers et al.) requires that substituting the non-intumescent layer of '522 (Rogers et al.), the thinnest of which explicitly stated therein ('522 (Rogers et al.)) is almost 9 times greater[2] than the thickest reinforcing layer 24 of '168 (Ten

[2] 0.16 cm in Example 1 (col. 7, line 14) of '522 (Rogers et al.) versus 7 mil (0.0178 cm) in '168 (Ten Eyck) (col. 5, lines 55-57).

Eyck). Further, the next the thinnest of which explicitly stated therein ('522 (Rogers et al.)) is more than 18 times greater[3] than the thickest reinforcing layer 24 of '168 (Ten Eyck). Therefore, one having ordinary skill in the art would not assume a thickness as suggested by the Patent Office the Office Action, and would not properly make the modification of '168 (Ten Eyck) with '522 (Rogers et al.) as suggested by the Patent Office.

Third, despite the explanation of the Patent Office in the fourth numbered paragraph and fifth unnumbered paragraph of the of the Advisory Action (mailed April 8, 2009), it is submitted that given the teachings of '168 (Ten Eyck) and '522 (Rogers et al.) discussed above with respect to the explicit thicknesses of reinforcing and non-intumescent layers, including the teachings related thereto in (i.e., in '168 (Ten Eyck)) and what they would convey to one of ordinary skill in the art, absent the inappropriate use of hindsight analysis, particularly in view of the "teaching away" of '168 (Ten Eyck) with respect to thickness of the reinforcing layer, one of ordinary skill in the art would not be properly motivated to combine '168 (Ten Eyck) and '522 (Rogers et al.) as suggested by the Patent Office.

Further with regard to claim 30, which depends from claim 21, Applicant notes that **additional** reasoning and rationale are required to substantiate a conclusion of obviousness. It is understood that the additional reasoning and rationale for rejecting this claim is on page 4, the first sentence in the first full paragraph of the Final Office Action mailed January 26, 2009, which states:

> Regarding the relative thicknesses of the intumescent and non-intumescent layers, one having ordinary skill in the art would have adjusted, though routine experimentation, the relative thicknesses of the layers in the mounting mat, in order to optimize the mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties.

First, it is submitted that claim 30 should be patentable for at least the reasons given above regarding the patentability of claim 21.

[3] 0.33 cm in Examples 2 and 3 (col. 7, lines 53-54 and 65-55, respectively) of '522 (Rogers et al.) versus 7 mil (0.0178 cm) in '168 (Ten Eyck) (col. 5, lines 55-57).

Second, while it is concluded by the Patent Office in the quote above from Final Office Action mailed January 26, 2009 (page 4, the first sentence in the first full paragraph) that one having ordinary skill in the art would have adjusted, though routine experimentation, the relative thicknesses of the layers in the mounting mat, in order to optimize the mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties, no real details or direction are articulated as to which of the various parameters (e.g., mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties) to focus on in particular, and to what extent versus each other. Hence, for example, absent the inappropriate use of hindsight analysis, one of ordinary skill in the art would not reasonable know which of the various parameters (e.g., mounting strength, thermal conduction properties, cost of manufacturing and thermal holding properties) to focus on, and to what extent versus each other to focus, or even that the associated experimentation would reasonably result in arriving at the claimed invention.

Claims 22-29 and 35-39 depend from 21. Claim 21 is patentable over '168 (Ten Eyck) in view of '522 (Rogers et al.) for at least the reasons discussed above. Therefore, claims22-29 and 35-39 should also be patentable.

Claims 31-34 depend directly or indirectly from 30. Claim 30 is patentable over '168 (Ten Eyck) in view of '522 (Rogers et al.) for at least the reasons discussed above. Therefore, claims 31-34 should also be patentable.

II. Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,999,168 (Ten Eyck) in view of U.S. Pat. No. 5,290,522 (Rogers et al.), and in further view of applicant's admission of prior art.

Claim 40 depends from 21. Claim 21 is patentable over '168 (Ten Eyck) in view of '522 (Rogers et al.) for at least the deficiency discussed above. Applicant's alleged admission of prior art fails to overcome this deficiency. Therefore, claim 40 should also be patentable.

CONCLUSION

In view Appellent's arguments, the final rejection of Appellent's claims are improper and should be reversed. Reversal of all pending rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

August 26, 2009
Date

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CLAIMS APPENDIX

1-20 (Cancelled)

21. (Previously Presented) Pollution control device comprising a pollution control element arranged in a casing with a mounting mat disposed between said casing and said pollution control element, said casing having an exterior exposed to the atmosphere, said mounting mat comprising at least one intumescent layer disposed between at least one first non-intumescent layer and at least one second non-intumescent layer, with said at least one first non-intumescent layer being disposed between said at least one intumescent layer and said pollution control element, and said at least one second non-intumescent layer being disposed between said at least one intumescent layer and said casing,

wherein said at least one intumescent layer comprises an intumescent material and has a surface density of at least about 500 g/m^2, said at least one first non-intumescent layer comprises inorganic fibers, has a surface density of at least about 450 g/m^2 and insulates said at least one intumescent layer from excessive heat from said pollution control element, and said at least one second non-intumescent layer comprises inorganic fibers, has a surface density of at least about 450 g/m^2 and insulates said at least one intumescent layer from relatively lower temperatures of said casing.

22. (Previously Presented) Pollution control device according to claim 21 wherein at least one of said first non-intumescent layer and said second non-intumescent layer comprises at least one of a layer of glass fibers, a layer of ceramic fibers obtainable from a sol-gel process, and a layer of annealed ceramic fibers.

23. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of at least one of said first non-intumescent layer and said second non-intumescent layer is at least about 600 g/m^2.

24. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of at least one of said first non-intumescent layer and said second non-intumescent layer is at least about 800 g/m^2.

25. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of at least one of said first non-intumescent layer and said second non-intumescent layer is at least about 1000 g/m^2.

26. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of at least one of said first non-intumescent layer and said second non-intumescent layer is at least about 1400 g/m^2.

27. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of said intumescent layer is at least about 1000 g/m^2.

28. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of said intumescent layer is at least about 1500 g/m^2.

29. (Previously Presented) Pollution control device according to claim 21 wherein the surface density of said intumescent layer is at least about 2000 g/m^2.

30. (Previously Presented) Pollution control device according to claim 21 wherein the uncompressed thickness of said intumescent layer is not more than about 1/3 of the combined uncompressed thicknesses of said first non-intumescent layer and said second non-intumescent layer.

31. (Previously Presented) Pollution control device according to claim 30 wherein the uncompressed thickness of each of said intumescent layer, said first non-intumescent layer and said second non-intumescent layer is in the range of from about 0.1 mm to about 10 mm.

32. (Previously Presented) Pollution control device according to claim 30 wherein the uncompressed thickness of said mounting mat is in the range of from about 3.0 mm to about 30 mm.

33. (Previously Presented) Pollution control device according to claim 31 wherein the uncompressed thickness of said mounting mat is in the range of from about 3.0 mm to about 30 mm.

34. (Previously Presented) Pollution control device according to claim 30 wherein said at least one first non-intumescent layer has a combined compressed thickness of at least about 1mm, and said at least one second non-intumescent layer has a combined compressed thickness of at least about 1 mm.

35. (Previously Presented) Pollution control device according to claim 21 wherein the uncompressed thickness of said intumescent layer is the same or thinner than the combined uncompressed thickness of said first non-intumescent layer and said second non-intumescent layer.

36. (Previously Presented) Pollution control device according to claim 21 wherein said mounting mat has a bulk density of 0.15 g/cm^3 to 0.50 g/cm^3.

37. (Previously Presented) Pollution control device according to claim 21 wherein said intumescent layer further comprises inorganic fibers.

38. (Previously Presented) Pollution control device according to claim 21 wherein at least one of said non-intumescent layers comprises inorganic fibers that are essentially shot free.

39. (Previously Presented) Pollution control device according to claim 21 wherein said at least one first non-intumescent layer, said at least one second non-intumescent layer, or said mounting mat comprises a needle-punched structure.

40. (Previously Presented) Pollution control device according to claim 21 wherein the pollution control element comprises a pollution control monolith having a wall thickness of not more than 0.127 mm and from 62 to 186 cells per square centimeter.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.